

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
28 April 2005 (28.04.2005)

PCT

(10) International Publication Number  
**WO 2005/039015 A1**

(51) International Patent Classification<sup>7</sup>: **H02J 7/00**,  
H02M 3/00

(21) International Application Number:  
PCT/EP2004/010875

(22) International Filing Date:  
29 September 2004 (29.09.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
03292409.4 30 September 2003 (30.09.2003) EP

(71) Applicant (for all designated States except US):  
**FREESCALE SEMICONDUCTOR, INC.** [US/US];  
6501 William Cannon Drive, Austin, TX 78735 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **VOORWINDEN, Cor**  
[NL/FR]; 34 rue Henri Bonis, F-31100 Toulouse (FR).

(74) Agent: **WHARMBY, Martin, A.**; Impetus IP Ltd, Grove  
House, Lutyens Close, Chineham Court, Basingstoke,  
Hampshire RG24 8AG (GB).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

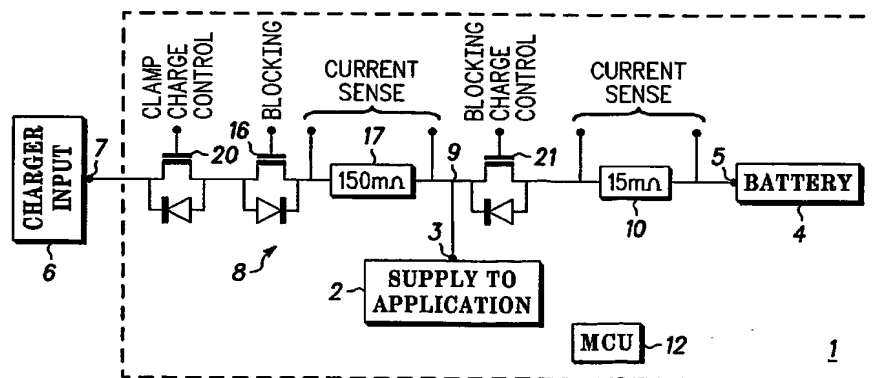
(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**Published:**

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: POWER SUPPLY APPARATUS



(57) Abstract: Power supply apparatus, especially for the active circuits of a portable radio communication device. The power supply supplies a direct voltage to a load (2) that is connected to a first terminal (3), es comprising a rechargeable battery (4) for connection to a second terminal (5), and a voltage generator (6) for recharging the battery (4) and supplying power to the load (2). The power supply includes first control means (20, 16) for controlledly supplying current from the voltage generator (6) to the first terminal (3) so as to control supply of current from the voltage generator (6) to the first terminal (3) so as to control supply of current from the voltage generator (6) to the load (2) and for preventing reverse flow of current from the first terminal (3) to the voltage generator (6), and second control means (21) for controlledly supplying current between the first (3) and second (5) terminals so as to control supply of current from the voltage generator (6) through the first control means (20, 16) to the battery (4) and from the battery to the load (2). The control means (20, 16; 21) present selectively a high impedance state (23), a low impedance state (26) or a controlled impedance state (29, 32). The first control means (20, 16) comprises a first (21) field-effect transistor connected in series between the voltage generator (6) and the first terminal (3) for controlling supply of current from the voltage generator (6) to the first terminal (3) and the first terminal (3) for preventing reverse flow of current from the first terminal (3) to the voltage generator (6).